

**MALAD CITY (PWS 6360006)**  
**SOURCE WATER ASSESSMENT FINAL REPORT**

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**July 18, 2001**



**State of Idaho**  
**Department of Environmental Quality**

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## Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for Malad City, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Malad City (PWS 6360006) drinking water system consists of three groundwater sources: Well #1, Well #2, and Well #3. According to the 2000 Sanitary Survey, Well #2 and #3 are plumbed to pump directly into the distribution system, however, they were taken offline in 1994 and serve only as backup wells. A check of the Idaho Drinking Water Information Management System (DWIMS) revealed past drinking water quality information for the three wells. From January 1996 to August 1997, total coliform bacteria were detected at various sample locations in the distribution system.

In December 1993, barium and cadmium were detected in Well #1 in a routine sample at concentrations of 0.02 milligrams per liter (mg/l) and 0.001 mg/l, respectively. The repeat sample detected barium and cadmium concentrations of 0.23 mg/l and 0.001 mg/l, respectively. Both the detections were below the Maximum Contaminant Level (MCL) for barium, 2.0 mg/l, and the MCL for cadmium, 0.005 mg/l. These detections occurred shortly after the well was completed. The inorganic compounds (IOCs), barium and cadmium have not been detected in samples collected from Well #1 since December 1993. In January 1999, arsenic was detected in Well #1 at a concentration of 0.008 mg/l. The MCL for arsenic is 0.05 mg/l. The United States Environmental Protection Agency (EPA) may lower the MCL for arsenic in the near future. From February 1993 to September 2000, nitrate levels in Well #1 ranged from 0.67 mg/l to 1.71 mg/l. The highest concentration of nitrates detected in Well #1 is under 20% the MCL for nitrate, 10 mg/l. No volatile organic compounds (VOCs), synthetic organic compounds (SOCs), or microbial contaminant detections were recorded for Well #1.

A Sanitary Survey conducted in 2000 indicated that Well #1 is in full compliance with current State Requirements. In terms of total susceptibility, Well #1 rated moderate for IOCs, VOCs, SOCs, and microbial contaminants. The agricultural land use and the presence of potential sources of contamination in the delineated source water assessment area, shallow depth to water, well drained soils, and the composition of the vadose zone (zone from land surface to the water table) contributed to the overall ratings for Well #1.

In March 1995, a routine sample from Well #2 detected the SOC Di (2-ethylhexyl) phthalate at a concentration of 12 micrograms per liter (µg/l) which exceeded the MCL for Di (2-ethylhexyl) phthalate of 6.0 µg/l. One week later, a repeat sample confirmed the presence of Di (2-ethylhexyl) phthalate at a concentration of 3.9 µg/l. The repeat sample detection of Di (2-ethylhexyl) phthalate was below the MCL. From January 1998 to September 2000, nitrate levels in Well #2 ranged from 3.13 mg/l to 4.16 mg/l. The highest concentration of nitrates detected in Well #2 is just over 40% of the MCL for nitrate. No VOCs, SOCs, or microbial contaminant detections were recorded for Well #2.

In terms of total susceptibility, Well #2 rated automatically high for IOCs, VOCs, SOCs, and microbial contaminants due to the presence of Spring Creek Canal 20 feet from the wellhead. Current State Requirements stipulate that a minimum 50-foot buffer must exist between a potential contaminant source and the wellhead. Spring Creek Canal is considered a potential contaminant source because any contaminants spilled into the canal could migrate down to the water table and contaminate the source water. Well #2 rated automatically high for

SOCs due to the confirmed detection of Di (2-ethylhexyl) phthalate at the wellhead. The agricultural land use, the presence of potential sources of contamination in the delineated source water assessment area, shallow depth to water, well drained soils, and a the composition of the vadose zone (zone from land surface to the water table) also contributed to the overall ratings for Well #2.

From February 1988 to September 2000, nitrate levels in Well #3 ranged from 1.71 mg/l to 4.6 mg/l. The highest concentration of nitrates detected in Well #3 is just over 45% of the MCL for nitrate. No VOCs, SOC, or microbial contaminant detections were recorded for Well #3.

In terms of total susceptibility, Well #3 rated moderate for IOCs, VOCs, SOC, and microbial contaminants. The agricultural land use and the presence of potential sources of contamination in the delineated source water assessment area, shallow depth to water, well drained soils, and a the composition of the vadose zone (zone from land surface to the water table) contributed to the overall ratings for Well #3.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Malad City, source water protection activities should first focus on correcting, if corrections have not been completed, the deficiencies outlined in the Sanitary Survey. If arsenic, barium, cadmium, and nitrate detections recorded in Well #1 increase, Malad City should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat these problems. These systems should be investigated if Malad City plans on reconnecting Well #2 and Well #3. Any spills from the identified potential contaminant sources in the source water assessment area should be monitored carefully. Most of the source water protection designated areas are outside the direct jurisdiction of Malad City. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

# SOURCE WATER ASSESSMENT FOR MALAD CITY, ONEIDA COUNTY, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

### Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

### Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## Section 2. Conducting the Assessment

### General Description of the Source Water Quality

The Malad City public drinking water system consists of three wells located on the western side of Malad City. Well #1 is the primary water supply well, while Well #2 and Well #3 are used as backup wells. Malad City is approximately 50 miles south of Pocatello and 100 miles north of Salt Lake City, Utah (Figure 1). The most recent Sanitary Survey indicates that the system has 800 connections and serves a population of 2,200.

Arsenic, barium, cadmium, and nitrates represent the main water chemistry recorded in the public water system, although the reported concentrations of these chemicals in the system were below the MCLs for each chemical. Barium and cadmium have not been detected in Well #1 since 1993. A detection in Well #2 of the SOC Di (2-ethylhexyl) phthalate was confirmed in 1995. No SOC's have been detected in the system since 1995. The IOC nitrate was detected from February 1993 to September 2000 at levels far below the MCL in Well #1. Arsenic was detected well below the MCL in Well #1 in January 1999. From February 1988 to September 2000, nitrate

concentrations detected in Well #2 and #3 were below 50% of the MCL for nitrate. No VOCs or microbial contaminants were recorded in the source water of any of the wells.

### **Defining the Zones of Contribution – Delineation**

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. Washington Group, International used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Malad Valley Hydrologic Province in the vicinity of Malad City. The computer model used site specific data, assimilated by Washington Group, International from a variety of sources including Malad City well logs, other local area well logs, and hydrogeologic reports summarized below.

The Malad Valley hydrologic province occupies approximately 170 square miles within the Basin and Range physiographic province. The basin is north-to-south trending. The valley floor within the hydrologic province ranges in elevation from 4,300 to 4,800 feet above mean sea level (msl). The Blue Spring Hills bound the basin to the west. The Bannock Mountain Range forms the northern and, with the Malad Range, the eastern boundaries. The east-to-west trending Woodruff fault bounds the restricted lower southern end near the Utah border (Pluhowski, 1970, p. 7).

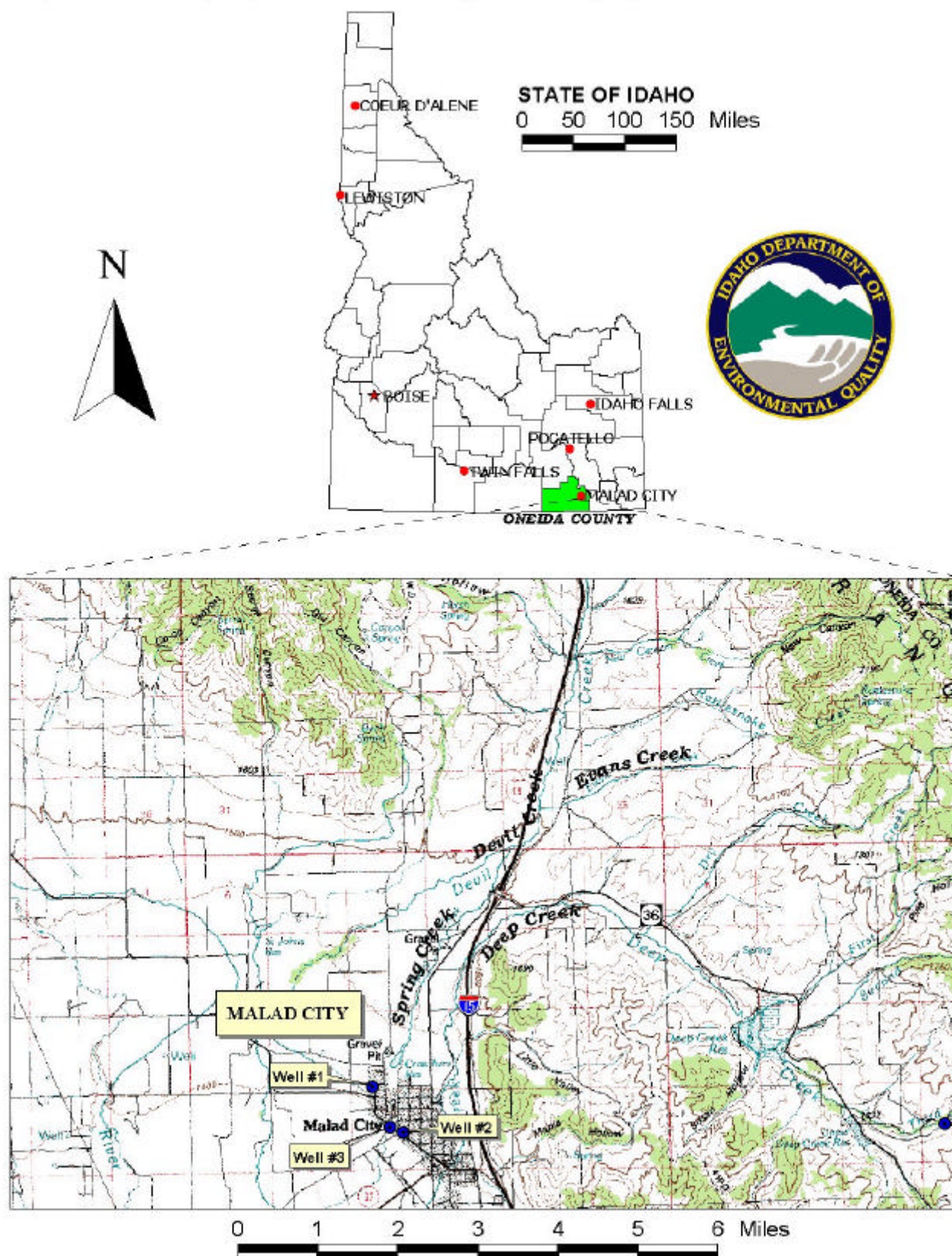
The Malad River and its tributaries drain southward. Near Malad City, these tributaries include the Little Malad River, Devil Creek, and Deep Creek. These tributaries are perennial in the area of interest (Pluhowski, 1970, p. 56).

The valley-fill aquifer consists of a thick sequence of interbedded clay, silt, sand, and gravel deposits (Pluhowski, 1970, p. 82). These deposits are a mixture of colluvium, alluvium, and lacustrine sediments deposited by Lake Bonneville and older Quaternary lakes. The valley-fill aquifer is over 700 feet in depth near the basin's center. The upper and middle sections of the aquifer are classified as unconfined (Pluhowski, 1970, p. 39).

The estimated annual average precipitation on the valley floor near Malad City is 15 inches. Annual evapotranspiration is estimated at 24 inches per year (Pluhowski, 1970, p. 24 and p. 32). Ground water movement in the basin is from the margins toward the valley center and south (Burnham et al., 1969, p. 20, and Pluhowski, 1970, p. 44).

The delineated source water assessment areas for the Malad City wells can best be described as an irregular pie shaped corridor approximately 0.5 mile wide near the wellheads and 2.5 miles wide at the northern edge of the corridor, 6 miles northeast of Malad City (Figures 2, 3, and 4). The actual data used by Washington Group, International in determining the source water assessment delineation areas is available upon request.

**Figure 1: Geographic Location of the City of Malad**



## Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside Malad City area is agricultural. Land use within the immediate area of the wellheads consists of residential property, commercial and light industrial, and agricultural.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

## Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during February 2001. This process involved identifying and documenting potential contaminant sources within Malad City Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. Malad City conducted an enhanced inventory in April 2001 to identify additional potential sources of contamination in the delineated source water assessment area. The delineated source water area for the wells contains various potential contaminant sources (Tables 1, 2, and 3). Figures 2, 3 and 4 show the locations of these various potential contaminant sites relative to the wellheads.

**Table 1. Malad City Well #1, Potential Contaminant Inventory**

Site #	Source Description	TOT Zone <sup>1</sup> (years)	Source of Information	Potential Contaminants <sup>2</sup>
1	≤ 200 Cows	0-3	Database Search	IOC, Microbes
	Highway 30	6-10	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>2</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

**Table 2. Malad City Well #2, Potential Contaminant Inventory**

Site #	Source Description	TOT Zone <sup>1</sup> (years)	Source of Information	Potential Contaminants <sup>2</sup>
	Spring Creek Canal	0-3	Enhanced Inventory	IOC, VOC, SOC, Microbes
1	≤ 200 Cows	3-6	Database Search	IOC, Microbes
2	≤ 200 Cows	3-6	Database Search	IOC, Microbes
	Highway 30	3-6, 6-10	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>2</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

**Table 3. Malad City Well #3, Potential Contaminant Inventory**

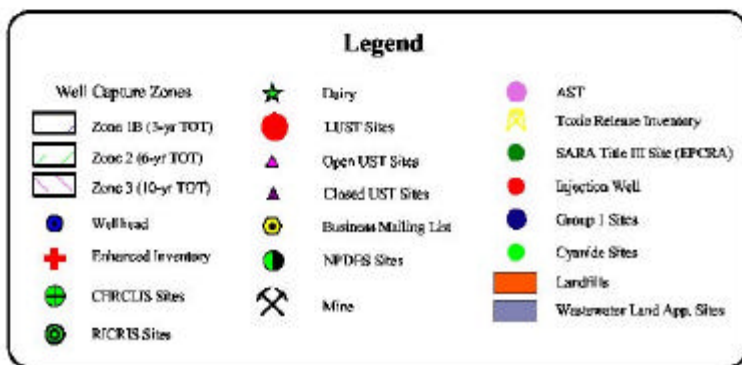
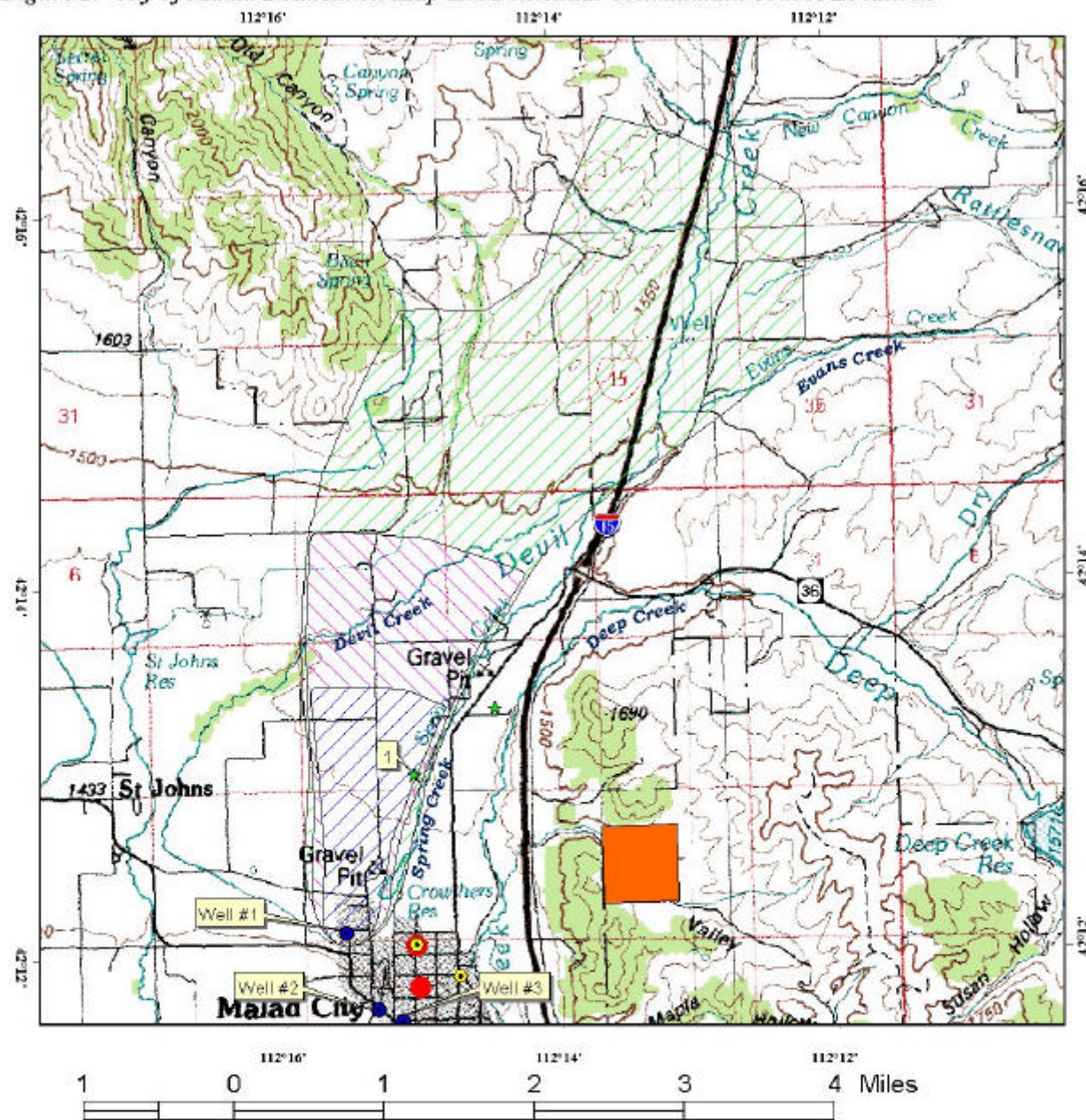
Site #	Source Description	TOT Zone <sup>1</sup> (years)	Source of Information	Potential Contaminants <sup>2</sup>
1	≤ 200 Cows	3-6	Database Search	IOC, Microbes
2	LUST <sup>3</sup> Site, Cleanup incomplete, impact: groundwater	0-3	Database Search	IOC, VOC, SOC
3	Heavy Equipment Service	0-3	Database Search	IOC, VOC, SOC
4	Mining and Ground Treatment	0-3	Database Search	IOC, VOC, SOC
5	Industrial, closed	0-3	Database Search	IOC, VOC, SOC
6	LUST Site, cleanup complete, impact: groundwater	0-3	Database Search	IOC, VOC, SOC
7	LUST Site, closed	0-3	Database Search	IOC, VOC, SOC
8	≤ 200 Cows	3-6	Database Search	IOC, Microbes
	Highway 30	6-10	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>2</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

<sup>3</sup> LUST = Leaking Underground Storage Tank

Figure 2. City of Malad Delineation Map and Pontential Contaminant Source Locations

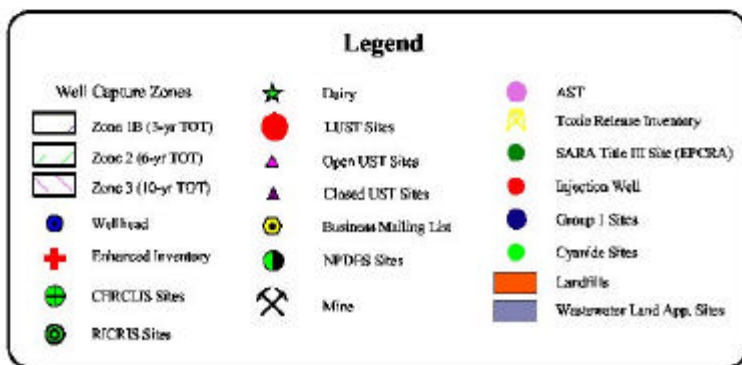
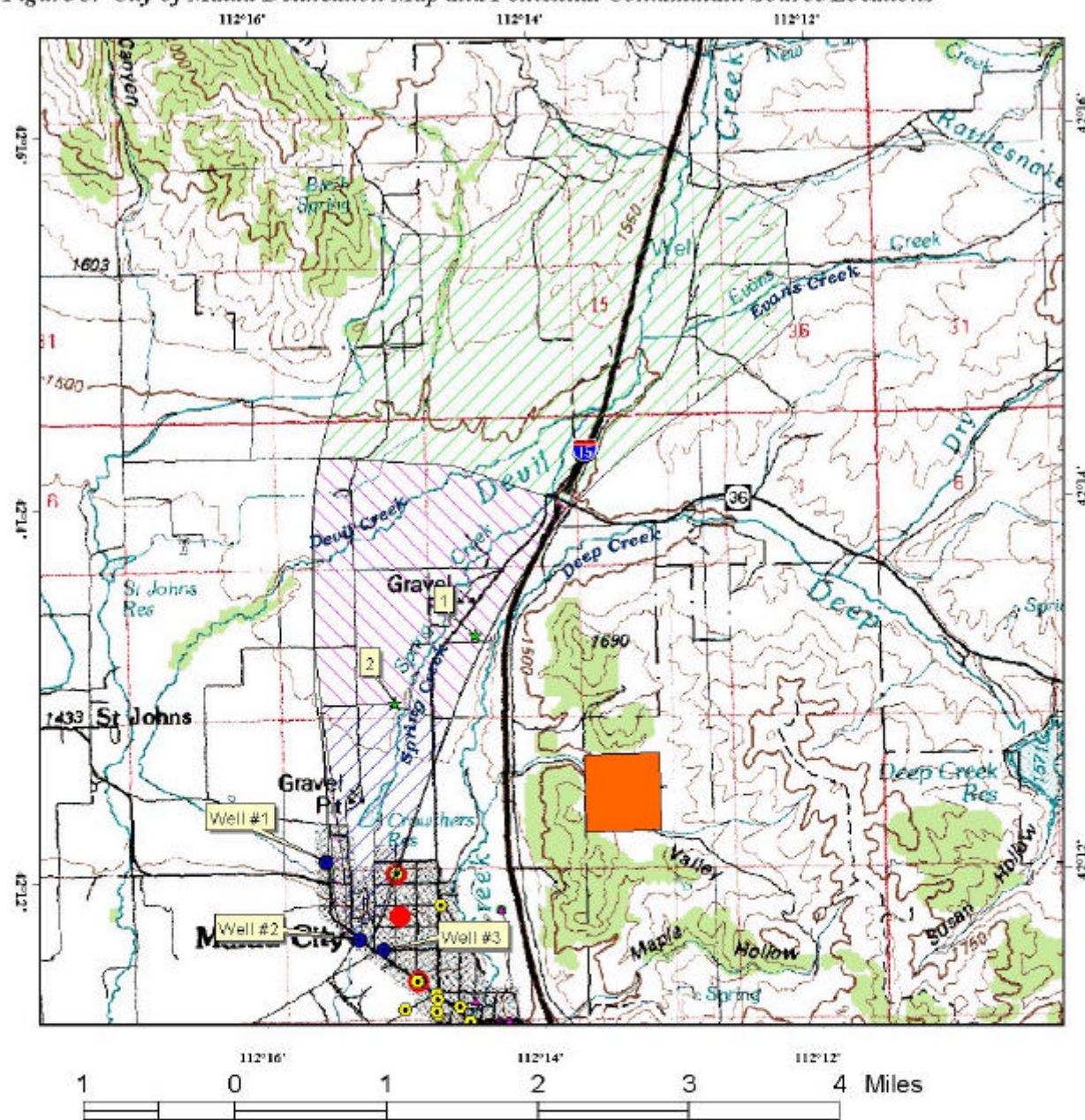


**PWS# 6360006**  
**Well #1**

d:\valley\era-projects\malad\_valley\city\_of\_malad.apr (Fig2/well1)

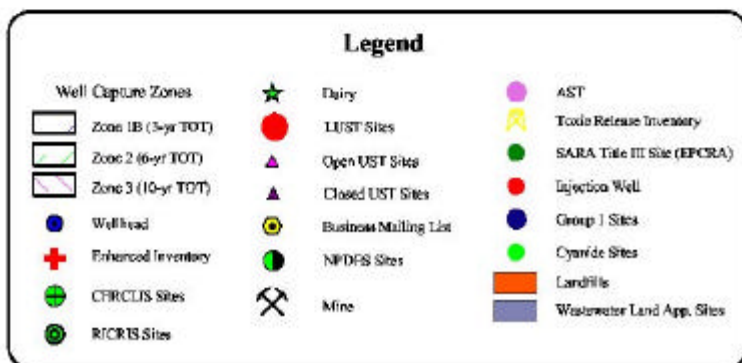
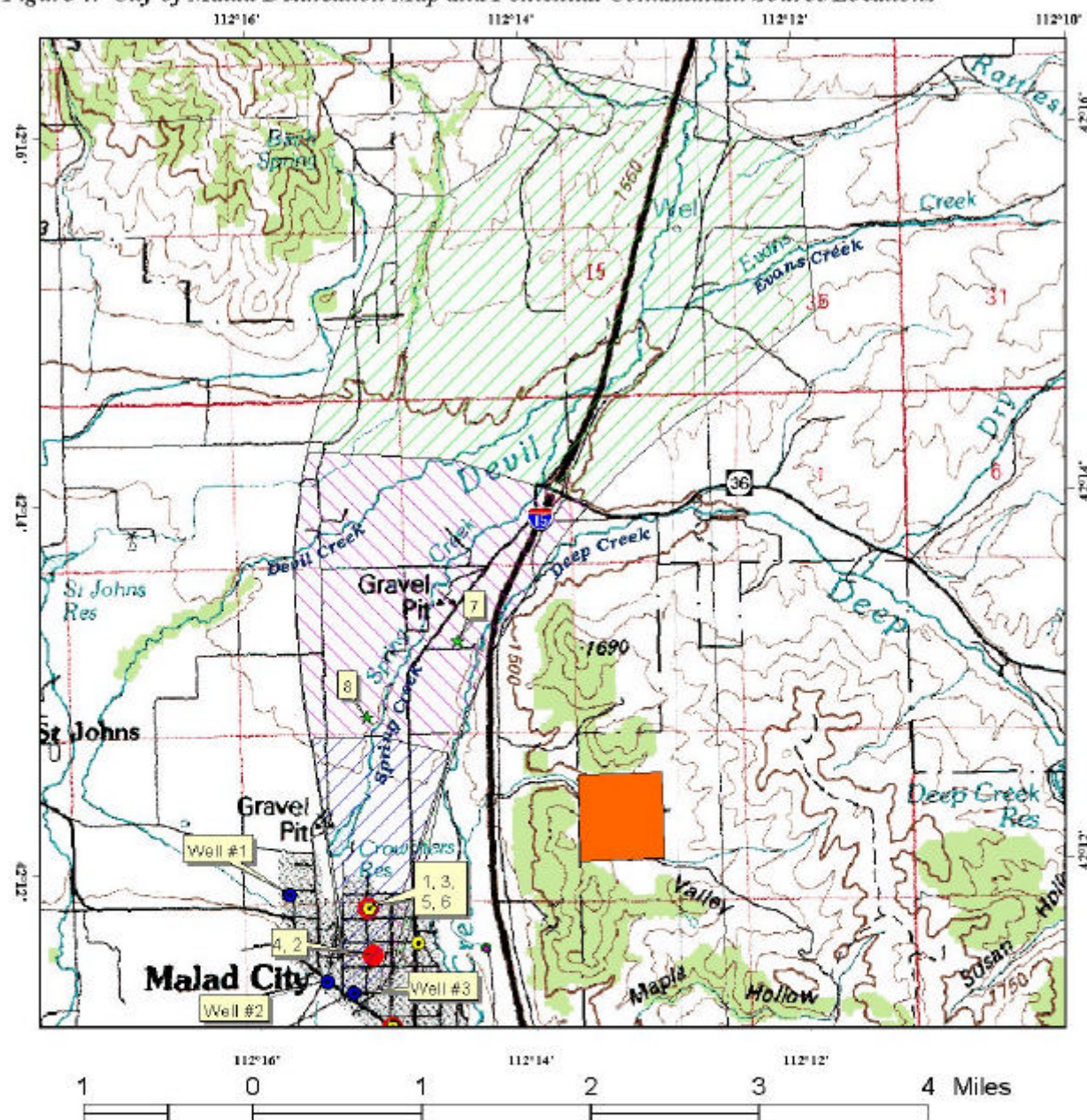
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Figure 3. City of Malad Delineation Map and Potential Contaminant Source Locations



**PWS# 6360006**  
**Well #2**

Figure 4. City of Malad Delineation Map and Pontential Contaminant Source Locations



**PWS# 6360003**  
**Well #3**

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### **Section 3. Susceptibility Analyses**

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

#### **Hydrologic Sensitivity**

Hydrologic sensitivity was moderate for all three wells (Table 4). This reflects the nature of the soils being in the moderately-drained to well-drained class, the vadose zone composition of predominantly of sands, gravels, and some clay, and the first ground water being located within 300 feet of ground surface. The wells contained at least 50 cumulative feet of low permeability clay layers that could retard downward movement of contaminants.

#### **Well Construction**

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The Malad City drinking water system consists of three wells that extract ground water for residential and commercial uses. Well #1 is the primary source of water for the system. According to the 2000 Sanitary Survey, Well #2 and Well #3 are off line. The well system construction scores were low for Well #1 and moderate for Well #2 and Well #3 (Table 4). A sanitary survey for the system was completed in 2000 to determine if the wells were in compliance with wellhead and surface seal standards. Each of the wells has a properly maintained wellhead seal however, a screen for the vent pipe is needed for Well #2. None of the wells are in the 100-year floodplain.

Well logs were available for all three wells. The highest water production zone for Well #2 and #3 is within 100 feet below static water level. The highest water producing zone for Well #1 is at least 100 feet below static water level, providing protection against infiltration of downward migrating contaminants. The casing was extended into low permeability units in the three wells, which leaves the wells susceptible to laterally migrating contamination. The casing thickness for Well #2 and Well #3 do not meet IDWR standards of 0.375 inches for 12-inch or greater diameter casing as listed in the Recommended Standards for Water Works (1997).

The IDWR Well Construction Standards Rules (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the Recommended Standards for Water Works (1997) during construction. Under current standards, all PWS wells are required to have a 50-foot buffer around the wellhead. Spring Creek Canal is within 20 feet of Well #2, constituting a potential contaminant source within the wellhead buffer zone.

#### **Potential Contaminant Sources and Land Use**

All three wells rated low (Table 4) for microbial contaminants (e.g., fecal coliform). Well #1 and Well #2 rated moderate for IOCs (e.g., nitrates), VOCs (e.g., petroleum products), and SOC (e.g., pesticides). Well #3 rated high for IOCs, VOCs, and SOC due to the presence of multiple potential contaminant sources in the delineated source water area. Agricultural land use and the presence of potential contaminant sources within the delineated source water assessment area contributed to the rankings for all three wells. The locations of potential contaminant sources for each well are shown on Figures 2, 3, and 4.

## Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of a VOC or SOC at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, the presence of a potential contaminant source within the 50-foot wellhead buffer zone will also automatically give a high susceptibility rating to a well. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, Well #1 rated moderate for IOC, VOC, SOC, and microbial contamination (Table 4). The moderate rating reflects the presence of potential contaminant sources in the delineated source water assessment area as well as the shallow depth to water, well-drained nature of the soils, and composition of the vadose zone. In terms of total susceptibility, Well #2 rated automatically high for IOC, VOC, SOC, and microbial contamination (Table 4) due to the presence of Spring Creek Canal, a potential contaminant source, 20 feet from the wellhead. Well #2 also rated high for SOC contamination due to a confirmed detection of Di (2-ethylhexyl) phthalate at the wellhead. In terms of total susceptibility, Well #3 rated moderate for IOC, VOC, SOC, and microbial contamination (Table 4). The moderate rating reflects the presence of potential contaminant sources in the delineated source water assessment areas for all four wells as well as the shallow depth to water, well-drained nature of the soils, and composition of the vadose zone.

**Table 4. Summary of Malad City Susceptibility Evaluation**

Well	Susceptibility Scores <sup>1</sup>									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	M	M	M	L	L	M	M	M	M
Well #2	M	M	M	M	L	M	H*	H*	H*,**	H*
Well #3	M	H	H	H	L	M	M	M	M	M

<sup>1</sup>H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H\* = Well rated automatically high due to the presence of a potential contaminant source in the wellhead area.

H\*\* = Well rated automatically high due to an SOC detection at the wellhead.

## Susceptibility Summary

Arsenic, barium, cadmium, and nitrates represent the main water chemistry recorded in the public water system, although the reported concentrations of these contaminants in the system were below the MCLs for each contaminant. Barium and cadmium have not been detected in Well #1 since 1993. A detection in Well #2 of the SOC Di (2-ethylhexyl) phthalate was confirmed in 1995. No SOC's have been detected in the system since 1995. The IOC nitrate was detected from February 1993 to September 2000 at levels far below the MCL in Well #1. Arsenic was detected well below the MCL in Well #1 in January 1999. From February 1988 to September 2000, nitrate concentrations detected in Well #2 and #3 were below 50% of the MCL for nitrate. No VOCs or microbial contaminants were recorded in the source water of any of the wells.

Countywide farm chemical use is considered low to moderate in this area although the delineated source water areas for the wells are surrounded by a significant amount of agricultural land. Potential sources of contamination exist in the delineated source water areas for the wells (Tables 1, 2, and 3, Figures 2, 3, and 4).

## **Section 4. Options for Source Water Protection**

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Malad City, source water protection activities should focus on implementation of practices aimed at protecting the area nearest the wells and addressing any deficiencies listed in the 2000 Sanitary Survey. If arsenic, barium, cadmium, and nitrate concentrations in the wells increase, Malad City should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat these problems. Additionally, Malad City could investigate means of minimizing the potential impact on Well #2 from any potential contamination carried by the Spring Creek Canal.

Malad City should also be diligent about local businesses with potential IOC, VOC, SOC, or microbial contaminants. Any spills from the multiple potential contaminant sources in the delineated capture zones should be monitored carefully. Any surface releases should be monitored to prevent contaminants from infiltrating to the ground water producing zones. Most of the source water protection designated areas are outside the direct jurisdiction of Malad City. Partnerships with state and local agencies and industry groups should be established and are critical to success. Continued vigilance in keeping the wells protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

## **Assistance**

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Pocatello Regional DEQ Office      (208) 236-6160

State DEQ Office      (208) 373-0502

Website: <http://www.deq.state.id.us>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as “Superfund” is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100-year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Attachment A

Malad City

Susceptibility Analysis  
Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- ≥ 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	11/11/93				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		0			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	0	0	1
(Score = # Sources X 2 ) 8 Points Maximum		2	0	0	2
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		6	4	4	6
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		2	2	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		13	11	11	8
4. Final Susceptibility Source Score		7	6	6	7
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE			
Drill Date	1/1/34				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2 ) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B 25 to 50% Irrigated Agricultural Land		2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		5	5	5	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II Greater Than 50% Irrigated Agricultural Land		2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		4	2	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		14	12	12	6
4. Final Susceptibility Source Score		9	8	8	8
5. Final Well Ranking		High*	High*	High*,**	High*

\*Well rated automatically high due to the presence of a potential contaminant source in the wellhead area.

\*\*Well rated automatically high due to a detection of Di(2-ethylhexyl)phthalate in a water sample collected from the well.

1. System Construction		SCORE			
Drill Date	1/1/49				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	YES	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	8	8	8	2
(Score = # Sources X 2 ) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	8	8	8	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B Greater Than 50% Irrigated Agricultural Land		4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	16	8
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II Greater Than 50% Irrigated Agricultural Land		2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		26	26	26	10
4. Final Susceptibility Source Score		11	11	11	10
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate